

Application No.: 10/728,135

Docket No.: JCLA12578-R

**REMARKS****Present Status of the Application**

Claims 1, 3-4, 6-8, 10-15 were rejected under 35 U.S.C. 103(a), as being unpatentable over Huang (U.S. Patent No. 6,939,664) in view of Yu et al. (U.S. Patent No. 5,282,066). Claims 16-17 were rejected under 35 U.S.C. 103(a), as being unpatentable over Huang in view of Yu, and further in view of Kanda et al. (EP 1152036). Applicant has amended claims 1 and 7 to more explicitly describe the claimed invention and has cancelled claims 11-17.

**Discussions of the 103 rejections**

*Claims 1, 3-4, 6-8, 10-15 were rejected under 35 U.S.C. 103(a), as being unpatentable over Huang (U.S. Patent No. 6,939,664) in view of Yu et al. (U.S. Patent No. 5,282,066).*

*Claims 16-17 were rejected under 35 U.S.C. 103(a), as being unpatentable over Huang in view of Yu, and further in view of Kanda et al. (EP 1152036).*

The office action stated that Huang does not disclose forming a protective layer on the resist layer and/or the acid supplying layer, but Yu teaches forming a protective layer on a photoresist or an acid-supplying layer (Yu's col. 6, lines 15-20). The Office Action admitted that Huang in view of Yu fails to teach the polarity of the protective layer being the same as that of the exposed portion of the photoresist layer after the baking step as recited in claims 16-17 and further relied on Kanda for the lacking feature.

Claims 1 and 7 have been amended by respectively merging limitations of claims 16 and 17, while claims 16-17 have been cancelled. Claims 11-15 have been cancelled.

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Applicant respectfully traverses the rejections for at least the reasons set forth below.

First, in the Kanda reference, upon exposure followed by baking (heat-treatment) of the water-soluble resin coating layer (alleged as the protective layer of this invention) coated on the resist pattern, "promoting the generation and diffusion of an acid in the resist pattern....., and by the acid thus diffused in the coating layer, the coating layer is crosslinked." (paragraph [0024]). Furthermore, "the coating layer thus crosslinked is developed with .....to *dissolve and remove the non-crosslinked coating layer*" (paragraph [0024]).

Clearly, Kanda teaches away from the present invention as Kanda's coating layer is crosslinked with the acid from the resist pattern and becomes **non-removable** in the development step. Kanda's coating layer is remained on the resist pattern after development.

On the other hand, in the present invention, the polarity of the protective layer that is reacted with acid becomes the same as that of the exposed portions of the photoresist layer and becomes **soluble**, and therefore removable in the later development step.

Moreover, as Huang merely acid generated in exposed regions of the resist layer (col. 9, lines 65-66), even in view of Yu's protective layer, nothing is taught or suggested in either reference "as a result of which ..... promotes acid-catalyzed reactions, i.e., will solubilize any layer (underlying or topcoat protective) in the exposed portions." (page 4, last two lines of the Office Action). Applicant respectfully disagrees with such postulation. In fact, as taught by Huang, "The portions of the first planarizing underlayer are preferably removed (i.e. in step (e) to remove revealed portions of the first layer using remaining portions of the second layer as a mask) by etching." (col. 11, lines 21-24). Clearly, Huang's second layer does not solubilize the topcoat first layer, since Huang's first layer is removed by etching using the remained second

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layer as a mask.

As stated by the Office Action, Yu teaches the protective layer as a water soluble polymer including polyvinyl alcohol and Kanda teaches the coating material layer is a water soluble resin comprising polyvinyl alcohol. In this case, even considering modifying Huang in view of Yu's water-soluble resin protective layer and further in view of Kanada's teachings, as alleged by the Office Action, such combination fails to arrive at the present invention and in fact teaches away from the present invention, because Kanda's water-soluble resin protective layer is crosslinked with acid generated from the resist pattern (Huang's exposed photoresist layer) and becomes non-removable (i.e. remained on the exposed photoresist layer).

Therefore, Applicant respectfully submits that none of these references, either alone or in combination, is able to arrive at the present invention as recited in amended claim 1 or 7.

For at least the foregoing reasons, independent claims 1 and 7 patently define over the prior art references, and should be allowed. For at least the same reasons, dependent claims 3-4, 6, 8, 10 patently define over the prior art as a matter of law, for at least the reason that these dependent claims contain all features of their respective independent claim.

Withdrawal of these 103 rejections are earnestly requested.

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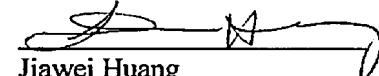
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**CONCLUSION**

In view of the foregoing, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a conference would be of value in expediting the prosecution of this application, he is cordially invited to telephone the undersigned counsel to arrange for such a conference.

Respectfully submitted,  
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